

REMARKS

In reply to this Final Office Action, Applicant would like to point out that the Examiner is suggesting that the ion beams generated by the prior art are substantially similar to that of a claimed invention, namely plasma sputtering. Applicant respectfully submits that this assumption by the Examiner is incorrect for the following reasons and for the reasons particularly associated with the rejections. In particular, ion beams are produced by ion guns which are also referred to as ion sources. In contrast thereto, plasma sputtering of Applicant's invention is carried out by plasma sputtering systems. The plasma sputtering technique of plasma sputtering systems is usually carried on by utilizing DC or AC voltage to accelerate the ions towards the object (target) to be sputtered. Different types of plasma sputtering systems are globe discharge sputtering deposition, cylindrical magnetron sputtering and planer magnetron sputtering. Still further, Applicant respectfully submits that plasma sputtering usually affects a large area. In contrast to plasma sputtering, an ion gun is a device in which gas ions are produced, omitted, accelerated and focused in a rather narrow beam. The acceleration takes place mainly in the extraction region since this is usually where the highest potential drop occurs. Still further, ion beams produced by ion guns and plasma etching all reduce the thickness of the material by removing material from the target. In contrast thereto, Applicant's invention does not remove material from the target and instead smoothes it out, changes the material structure or reduces the defects in the material.

The Examiner has rejected the claims 1, 5, 9, 10 through 13 and 17 under 35 USC 102 as being anticipated by or, in the alternative under 35 USC 103 as being obvious over Hebard stating that Hebard teaches a process wherein a superconductor material is treated at the claimed energy and incidence angle wherein the ions are chosen from the claimed elements and an ion beam generator by the prior art of Hebard is substantially similar to plasma sputtering.

In reply to this rejection, Applicant would like to point out that in Hebard it is taught the utilization of an ion beam and this ion beam takes away material and thins the layer (see Hebard, column 2, lines 56-60) and does not function in the way of the plasma sputtering of Applicant's invention. Accordingly, for the reasons above, Applicant respectfully submits that the plasma sputtering of Applicant's invention and the ion beam of Hebard are not substantially the same and are in fact different. Therefore, Applicant respectfully submits that Hebard does not disclose or suggest each and every element of Applicant's invention and the

claims 1, 5, 9, 10 through 13 and 17 are not anticipated by or in the alternative under 35 USC 103 as being obvious over Hebard.

The Examiner has rejected the claims 1 through 4, 6, 8, 10 through 13 and 16 under 35 USC 102 as being anticipated by or, in the alternative, under 35 USC 103 as being obvious over Reade et al. stating that Reade et al. teaches a method for ion texturing superconductor devices wherein the materials to be textured include MgO, YSZ, nickel alloys, etc. wherein an ion beam at the claimed energies and claimed angles are disclosed and plasma sputtering is the same as an ion beam.

In reply to this rejection, Applicant would like to incorporate by reference his comments above concerning Applicant's invention. In addition, Applicant has carefully reviewed Reade et al. and respectfully submits that at column 10, lines 41-47 it discloses the use of ion guns 22 and 24 whose purpose is not smoothing but instead applying a texture to the substrate (see column 3, lines 34 and 35 and column 3, lines 37-47). Accordingly, Applicant respectfully submits that not only is the process different in Reade et al. but also the product is different since instead of being smooth it is textured. As a result, Applicant respectfully submits that the claims 1 through 4, 6, 8, 10 through 13 and 16 are not anticipated by nor obvious over Reade et al.

The Examiner has rejected the claims 1, 5, 9, 10 through 13 and 17 under 35 USC 103 as being obvious over Hebard in view of Desu et al. and Kroger stating that Hebard discloses all of the present invention except for plasma sputtering in an argon plasma; Desu et al. teaches a method of etching a thin film utilizing ion beam etching, plasma etching and sputtering etching and it is the Examiner's opinion that plasma sputtering is substantially the same thing or equivalent to sputtering etching; Kroger teaches that it is well known to treat substrate with sputter etching in an argon plasma; and it would have been obvious to one of ordinary skill in the art to modify Hebard in view of the teachings of Desu et al. and Kroger.

In reply to this rejection, Applicant would like to incorporate by reference his comments above concerning Applicant's invention and Hebard. Still further, Applicant has carefully reviewed Desu et al. and respectfully submits that Desu et al. teaches a method of etching a film utilizing sputtering etching. As mentioned above, sputtering etching removes surface material and is not the equivalent of the plasma sputtering of Applicant's invention.

Still further, Applicant's careful review of Kroger indicates that as admitted by the Examiner it teaches sputter etching but in an argon plasma. Again, Applicant respectfully

submits that sputter etching is not the same as plasma sputtering or the equivalent thereof since it removes material (as is admitted by Desu et al. at column 3, lines 42-53) and does not function in the manner of the plasma sputtering of Applicant's invention.

In view of the above, therefore, Applicant respectfully submits that the combination suggested by the Examiner would not be Applicant's invention since it would require sputtering etching or ion beam thinning which produces a product different than Applicant's invention. Therefore, Applicant respectfully submits that the claims 1, 5, 9, 10 through 13 and 17 are not obvious over Hebard in view of Desu et al. or Kroger.

The Examiner has rejected the claims 1 through 4, 6, 8, 10 through 13 and 16 under 35 USC 103 as being obvious over Reade et al. in view of Desu et al. and Kroger stating that Reade et al. teaches a method for ion texturing superconducting devices utilizing an ion beam; Desu et al. teaches sputtering etching which in the Examiner's opinion is the equivalent of plasma etching; Kroger teaches a method for making a superconductor wherein it is known to treat the substrate with super etching in an argon plasma; therefore, it is the Examiner's opinion that Applicant's invention would be obvious over Reade et al. in view of Desu et al. and Kroger.

In reply to this rejection, Applicant would like to incorporate by reference his comments above concerning Applicant's invention, Reade et al., Desu et al. and Kroger. Accordingly, Applicant respectfully submits that the combination suggested by the Examiner would not be Applicant's invention since the combination uses sputtering etching or ion beams which are not equivalent to plasma sputtering and would not produce a product which is the same as that of Applicant's invention. Therefore, Applicant respectfully submits that the claims 1 through 4, 6, 8, 10 through 13 and 16 are not obvious over Reade et al. in view of Desu et al. and further in view of Kroger.

The Examiner has rejected the claims 15 and 18 under 35 USC 103 as being obvious over Hebard in view of Chu et al. stating that Hebard discloses all of the present invention except for annealing; Chu et al. teaches a method of making superconductors wherein the superconductor is annealed after ion texturing for the purposes of restoring crystallinity; and it would have been obvious to one of ordinary skill in the art to modify Hebard in view of the teachings of Chu et al.

In reply to this rejection, Applicant would like to incorporate by reference his comments above concerning Applicant's invention and Hebard. In addition, Applicant has

carefully reviewed Chu et al. and respectfully submits that while it may teach a method of making superconductors, it teaches a method utilizing GCIB bombardment to remove the surface (see column 4, line 18). In addition, Applicant respectfully submits that Chu et al. teaches that the superconductor is annealed to restore the high temperature superconducting properties of the surface layer by restoring the crystallinity after the GCIB bombardment. Accordingly, Applicant respectfully submits that Chu et al. discloses a process which functions substantially the same way as the plasma etching and ion beam which all remove material from the substrate and the annealing in Chu et al. merely partially restores the high temperature superconductive properties of the surface layer.

In view of the above, therefore, Applicant respectfully submits that the combination suggested by the Examiner would not be Applicant's invention because it still utilizes a process which removes material from the substrate and does not function in the sense of the plasma sputtering of Applicant's invention and further produces a product which is different from the product of Applicant's invention. Therefore, Applicant respectfully submits that the claims 15 and 18 are not obvious over Hebard in view of Chu et al.

The Examiner has rejected the claim 7 under 35 USC 103 as being obvious over Reade et al. in view of Doi et al. and Shindo et al. stating that Reade et al. fails to teach texturing superconductors; Shindo et al. teaches a method of making a solar cell where it is known to texture the claimed semiconductors; Doi et al. teaches to utilize GaAs as a substrate for a superconductor; and it would have been obvious to one of ordinary skill in the art to modify Reade et al. in view of the teachings of Shindo et al. and Doi et al.

In reply to this rejection, Applicant would like to incorporate by reference his comments above concerning Applicant's invention, Reade et al. and Doi et al. Still further, Applicant has carefully reviewed Shindo et al. and respectfully submits that in Shindo et al. a single crystalline film is formed by supplying reactive gas at a low temperature and applying multiple ion beams and accordingly is a method different from that of the present invention and would produce a product different than the present invention, namely one that is textured in the same manner as Reade et al.

Therefore, Applicant respectfully submits that the combination suggested by the Examiner is not Applicant's invention and the claim 7 is not obvious over Reade et al. in view of Doi et al. and Shindo et al.

The Examiner has rejected the claims 15 and 18 under 35 USC 103 as being obvious

over Hebard in view of Chu et al. and Desu et al. or Kroger stating that the combination thereof discloses all of Applicant's invention. In reply thereto, Applicant would like to incorporate by reference his comments above concerning Applicant's invention, Hebard, Chu et al., Desu et al. and Kroger and respectfully submits that the combination suggested by the Examiner is not Applicant's invention and would produce a product which is different from the product of Applicant's invention. Therefore, Applicant respectfully submits that the claims 15 and 18 are not obvious over Hebard in view of Chu et al. and Desu et al. or Kroger.

The Examiner has rejected the claim 7 under 35 USC 103 as being obvious over Reade et al. in view of Doi et al. and Shindo et al. and Desu et al. or Kroger stating that the combination would be all of Applicant's invention. In reply to this rejection, Applicant would like to incorporate by reference his comments above concerning Applicant's invention, Reade et al., Doi et al., Shindo et al., Desu et al. and Kroger and respectfully submits that the combination suggested by the Examiner would not be Applicant's invention and the product would be different from the product of Applicant's invention. Therefore, Applicant respectfully submits that the claim 7 is not obvious over Reade et al. in view of Shindo et al., Desu et al. or Kroger.

In view of the above, it is respectfully requested that this Response be entered, favorably considered and the case passed to issue.

Please charge any additional costs incurred by or in order to implement this Response or required by any requests for extensions of time to QUINN EMANUEL DEPOSIT ACCOUNT NO. 50-4367.

Respectfully submitted,

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